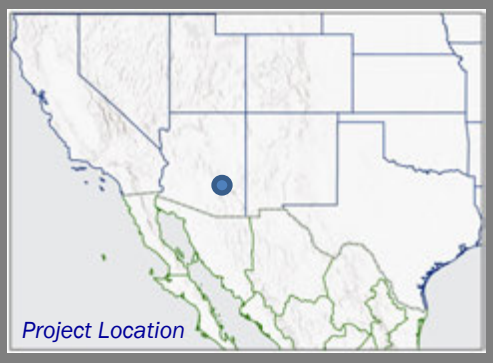
## RESTORATION

# Multi-Species Grassland Restoration in the Bonita Valley

United States Department of Agriculture
NRCS
Natural Resources Conservation Service

The Bonita area, between the Pinaleño and Galiuro mountains, is historical habitat for pronghorn (*Antilocapra americana*), scaled quail (*Callipepla squamata*), mule deer (*Odocoileus hemionus*) and many other grassland species. Mesquite (*Prosopis velutina*) has been expanding into historical grasslands, degrading wildlife habitat, and reducing forage quality for cattle. Furthermore, mesquite encroachment and fence lines fragment grassland habitat for pronghorn and other grassland-obligate species. Partners have been conducting grassland restoration projects for over a decade, and recently have expanded to a multi-species focus.



*Project Location*

*Bonita Plains Site Post Mesquite Removal/Chase Skaarer*

## KEY ISSUES ADDRESSED

Mesquite encroachment in the Bonita grasslands infringes upon the line of sight pronghorn require and reduces forage quantity for wildlife and cattle. Pronghorn rarely use habitats where shrub growth exceeds 2-3 feet or 10% cover. Fence lines and mesquite encroachment fragment grasslands, reducing access to important habitat while isolating populations of pronghorn from each other. To create a mosaic of different habitat types, land managers must account for the habitat preferences of multiple species and restoration goals of many stakeholders. Communicating the requirements of various restoration prescriptions is difficult, as is assessing and maintaining the success of mesquite removal efforts.

## PROJECT GOALS

- Connect areas of high-quality pronghorn and scaled quail habitat
- Develop and implement treatments that restore a mosaic of habitat types while meeting the needs of multiple wildlife species
- Build more communicative partnerships between land managers and grubbing contractors
- Maintain treated areas by strengthening partnerships

# WIN-WIN RESTORATION PROJECT

**The Bonita grasslands' carrying capacity, wildlife habitats, and native species' vitality improved post-restoration while ranches gain increased climate resilience and economic productivity.**

*Excavator Removing Mesquite in Bonita Area/John Millican*

## PROJECT HIGHLIGHTS

**Building On Success:** The initial goal of restoring 20,000 acres via mesquite removal was reached in 2018. Through partnership development, the success story spread between ranchers, and then the project shifted to multi-species restoration along wildlife corridors, introducing new landscape and species varieties.

**Wildlife Corridors**: Individual restoration projects were made contiguous to foster connectivity of pronghorn population subsets and increase habitat permeability. Restoration work modified over 105 miles of fence lines.

**Woody Plant Removal:** Between 2010 and 2018, partners typically removed 90%-99% of mesquite to benefit pronghorn. Partners now conduct restoration work in ecological sites outside of core pronghorn habitat to benefit other wildlife and leave higher mesquite cover.

**Spatial Tools**: Several user-friendly GIS-based phone apps allow for effective communication between resource managers and contractors. One common feature allows users to save points and share GPS data via text.

**Multi-Species Planning:** Stakeholders used web-based tools to determine where different species were living in order to guide different habitat restoration. Examples include IPaC, ERT (Game and Fish Environmental Review Tool), and other user-friendly decision-support tools.

## Collaborators

- AZGFD Landowner Relations Program
- Arizona Antelope Foundation
- See online for full list of partners

## LESSONS LEARNED

Because much of this restoration is conducted on privately-owned land used for livestock grazing, landscape-level restoration would not be possible without landowners' interest in improving the quality of their ranches. Project partners developed prescriptions that benefit both wildlife habitat and forage for livestock. Effective monitoring of completed restoration treatments demonstrate younger mesquites return to the landscape between 3 and 7 years post-treatment and require re-treatment with herbicides. The effectiveness of herbicides used for re-treatment of mesquite after initial grubbing depends on local weather conditions. With increased climate variability it is important to build in flexibility to herbicide treatment plans and allow delays if needed to ensure treatment effectiveness. Once grubbing contractors understand where to take and where to leave mesquites and resource managers understand the limits of the machinery, restoration becomes a much smoother process. Phone-based GPS mapping tools and effective communication among project partners has been key to successfully communicating the boundaries and requirements for different prescriptions across the landscape.

## NEXT STEPS

- Expand partnerships to increase participation and funding to assist landowners in completing restoration efforts
- Strengthen outreach efforts to increase landowner interest in restoration
- Assess and communicate success of low-tech erosion control structures made of mesquite

**For more information on this project, contact Sarah Gandaria: sarah_gandaria@fws.gov**

*Calculating Grubbed Mesquite Recruitment Rates/John Millican*

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